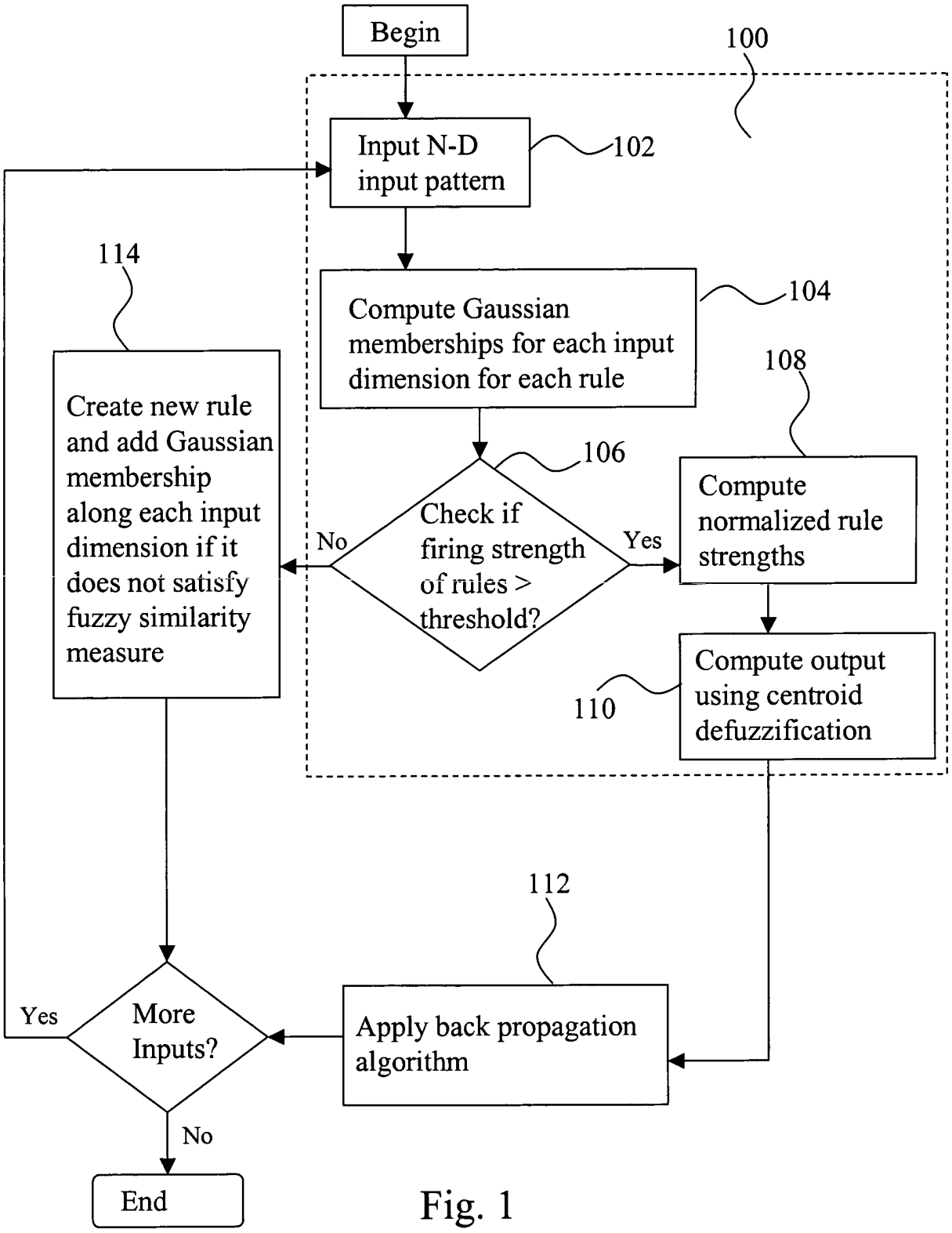
Begin
100
Input N-D input pattern
102
Compute Gaussian memberships for each input dimension for each rule
104
Check if firing strength of rules > threshold?
106
No
Yes
Create new rule and add Gaussian membership along each input dimension if it does not satisfy fuzzy similarity measure
114
Compute normalized rule strengths
108
Compute output using centroid defuzzification
110
Apply back propagation algorithm
112
More Inputs?
Yes
No
End

Fig. 1

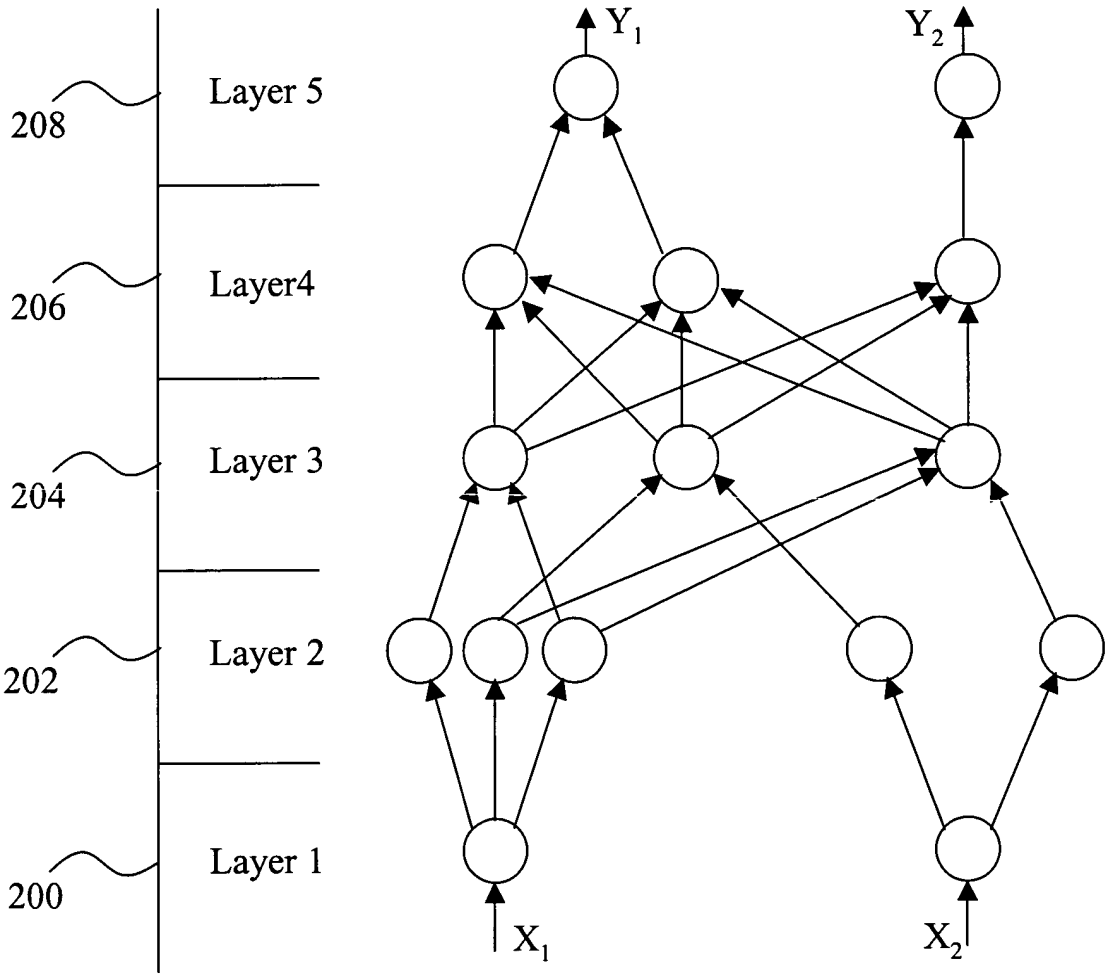
Layer 5
208
Layer4
206
Layer 3
204
Layer 2
202
Layer 1
200
Y_1
Y_2
X_1
X_2

Fig. 2

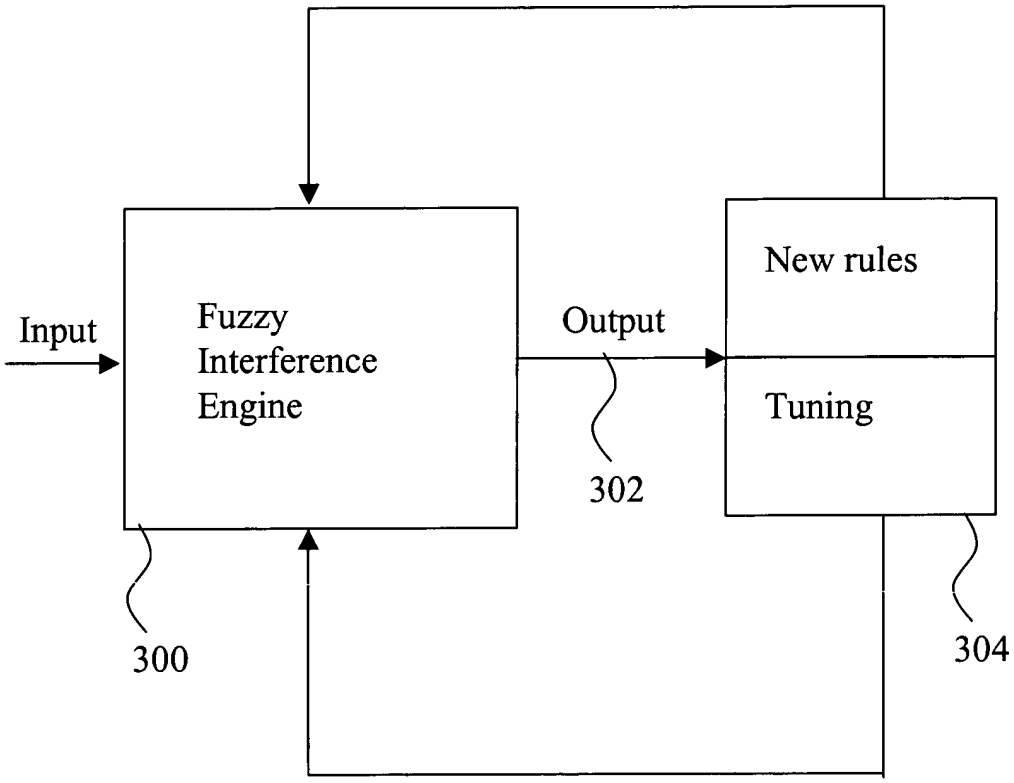
Input
Fuzzy
Interference
Engine
Output
New rules
Tuning
300
302
304

Fig. 3

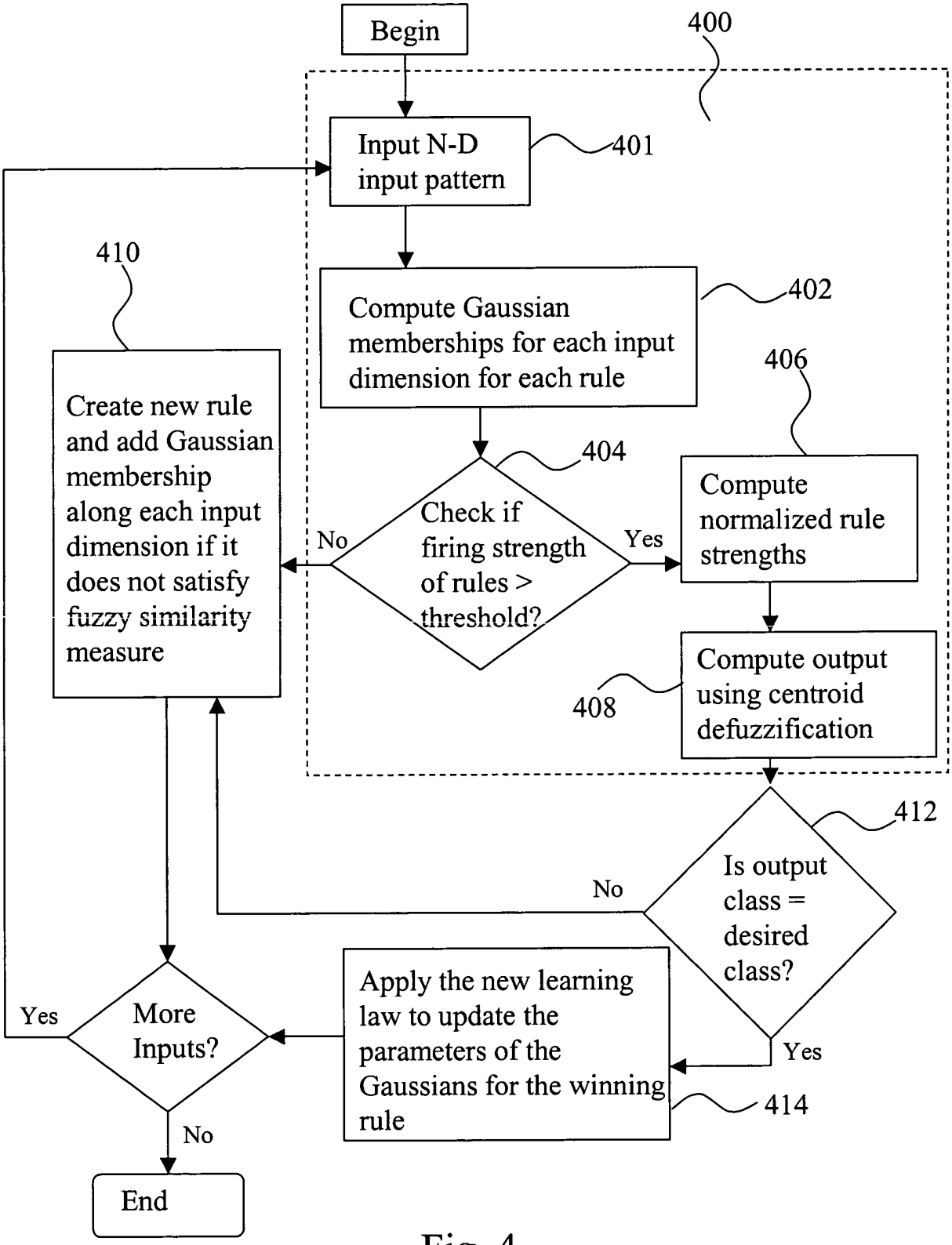
Begin
400
Input N-D input pattern
401
Compute Gaussian memberships for each input dimension for each rule
402
406
404
Check if firing strength of rules > threshold?
No
Yes
Compute normalized rule strengths
Compute output using centroid defuzzification
408
410
Create new rule and add Gaussian membership along each input dimension if it does not satisfy fuzzy similarity measure
412
Is output class = desired class?
No
Yes
Apply the new learning law to update the parameters of the Gaussians for the winning rule
414
More Inputs?
Yes
No
End

Fig. 4

Data Set	SOFIN		M-PROBART		Our Invention	
	Test set accuracy (%)	Number of Rules	Test set accuracy (%)	Number of Rules	Test set accuracy (%)	Number of Rules
1	89	57	98.1	103	97.9	28
2	79	89	96.2	172	95.5	51
3	89	102	94.1	235	94.3	70

Fig. 5